Amendments to the Claims

This listing of claims will replace all prior versions and listing of claims in this application.

Listing of Claims:

1-14. (Canceled)

15. (Currently Amended: ~~The process of claim 3~~ A process for selectively removing large catalyst particles from a reaction system, wherein the reaction system comprises a reaction zone and a disengaging zone, the process comprising the steps of:

(a) feeding a plurality of catalyst particles into the reaction zone, wherein the plurality of catalyst particles comprises a molecular sieve selected from the group consisting of SAPO-5, SAPO-8, SAPO-11, SAPO-16, SAPO-17, SAPO-18, SAPO-20, SAPO-31, SAPO-34, SAPO-35, SAPO-36, SAPO-37, SAPO-40, SAPO-41, SAPO-42, SAPO-44, SAPO-47, SAPO-56, AEI/CHA intergrowths, metal containing forms thereof, intergrown forms thereof, and mixtures thereof;

(b) contacting the plurality of catalyst particles with a feedstock comprising an oxygenate in the reaction zone under conditions effective to convert at least a portion of the feedstock to product comprising light olefins;

(c) separating a portion of the catalyst particles from the product in a disengaging zone;

(d) directing a portion of the plurality of catalyst particles separated in the disengaging zone to a counter-flow cyclone separator, wherein the portion of the plurality of catalyst particles has a first median particle diameter;

(e) separating the portion of the plurality of catalyst particles in the counter-flow cyclone separator into a small catalyst stream and a large catalyst stream by modulating flow rate of a gas stream to the cyclone separator to control particle size of the catalyst streams, wherein the small catalyst stream has a second median particle diameter less than the first median particle diameter; and

(f) directing at least a portion of the small catalyst stream to the reaction system.

16-19. (Canceled)

20. (Currently Amended): ~~The process of claim 3, wherein step (b) forms an at least partially deactivated catalyst, the process further comprising the step of:~~ A process for selectively removing large catalyst particles from a reaction system, wherein the reaction system comprises a reaction zone, and a disengaging zone, the process comprising the steps of:

(a) feeding a plurality of catalyst particles into the reaction zone;

(b) contacting the plurality of catalyst particles with a feedstock in the reaction zone under conditions effective to convert at least a portion of the feedstock to product and to at least partially deactivate at least a portion of the catalyst particles;

(c) separating a portion of the catalyst particles from the product in a disengaging zone;

~~(f)~~(d) regenerating ~~the~~ at least a portion of the partially deactivated catalyst in a catalyst regenerator to form ~~the portion of the plurality of~~ regenerated catalyst particles;~~,~~;

(e) ~~wherein step (e) comprises~~ directing the at least a portion of the ~~plurality of~~ regenerated catalyst particles from the catalyst regenerator to ~~the separation unit~~ a counter-flow cyclone separator, wherein the portion of the regenerated catalyst particles has a first median particle diameter;

(f) separating the regenerated catalyst particles in the counter-flow cyclone separator into a small catalyst stream and a large catalyst stream by modulating flow rate of a gas stream to the cyclone separator to control particle size of the catalyst streams, wherein the small catalyst stream has a second median particle diameter less than the first median particle diameter; and

(g) directing at least a portion of the small catalyst stream to the reaction system.

21. (Currently Amended): ~~The process of claim 3, wherein step (b) forms an at least partially deactivated catalyst, the process further comprising the step of:~~ A process for selectively removing large catalyst particles from a reaction system, wherein the reaction system comprises a reaction zone, and a disengaging zone, the process comprising the steps of:

(a) feeding a plurality of catalyst particles into the reaction zone;

(b) contacting the plurality of catalyst particles with a feedstock in the reaction zone under conditions effective to convert at least a portion of the feedstock to product and to at least partially deactivate at least a portion of the catalyst particles;

(c) separating a portion of the catalyst particles from the product in a disengaging zone;

~~(f)~~(d) stripping ~~the~~ at least a portion of the partially deactivated catalyst in a catalyst stripper to form ~~the portion of the plurality of~~ stripped catalyst particles~~,~~;

(e) ~~wherein step (c) comprises~~ directing the at least a portion of the ~~plurality of~~ stripped catalyst particles from the catalyst stripper to ~~the separation unit~~ a counter-flow cyclone separator, wherein the portion of the stripped catalyst particles has a first median particle diameter;

(f) separating the stripped catalyst particles in the counter-flow cyclone separator into a small catalyst stream and a large catalyst stream by modulating flow rate of a gas stream to the cyclone separator to control particle size of the catalyst streams, wherein the small catalyst stream has a second median particle diameter less than the first median particle diameter; and

(g) directing at least a portion of the small catalyst stream to the reaction system.

22. (Currently Amended): ~~The process of claim 3, wherein the process further comprises the step of:~~ A process for selectively removing large catalyst particles from a reaction system, wherein the reaction system comprises a reaction zone, and a disengaging zone, the process comprising the steps of:

(a) feeding a plurality of catalyst particles into the reaction zone;

(b) contacting the plurality of catalyst particles with a feedstock in the reaction zone under conditions effective to convert at least a portion of the feedstock to product;

(c) separating a portion of the catalyst particles from the product in a disengaging zone;

(d) removing at least a portion of the separated catalyst particles from the disengaging zone;

~~(f)~~(e) cooling ~~a heated catalyst particle from the reaction~~ at least a portion of the particles removed from the disengaging zone in a catalyst cooler,

(f) ~~wherein step (c) comprises~~ directing ~~the~~ at least a portion of the ~~plurality of~~ cooled catalyst particles from the catalyst cooler to ~~the separation unit~~ a counter-flow cyclone separator, wherein the portion of the stripped catalyst particles has a first median particle diameter;

(g) separating the cooled catalyst particles in the counter-flow cyclone separator into a small catalyst stream and a large catalyst stream by modulating flow rate of a gas stream to the cyclone separator to control particle size of the catalyst streams, wherein the small catalyst stream has a second median particle diameter less than the first median particle diameter; and

(h) directing at least a portion of the small catalyst stream to the reaction system.

23-104. (Canceled)

105. (Currently Amended): The reaction process of claim [[104]]113, wherein the catalyst particles are separated from the product in a disengaging zone having a larger cross sectional area than that of the reaction zone.

106. (Currently Amended): The reaction process of claim [[104]]113, wherein the separation unit is selected from the group consisting of: a cyclone separator, a settling vessel, a screen, and an air classifier.

107. (Currently Amended): The reaction process of claim [[104]]113, wherein the separation unit comprises a counter-flow cyclone separator.

108. (Currently Amended): The reaction process of claim [[104]]113, wherein the feedstock comprises an oxygenate and the product comprises light olefins.

109. (Currently Amended): The reaction process of claim [[104]]113, wherein the first catalyst stream has a median particle diameter greater than 20 microns and less than 120 microns.

110. (Currently Amended): ~~The process of claim 104, wherein step (b) forms~~ A reaction process in which catalyst particles are separated according to median particle size and directed to a reaction zone, the process comprising the steps of:

a) contacting catalyst particles with a feedstock in the reaction zone to convert at least a portion of the feedstock to product and form an at least partially deactivated catalyst~~, the process further comprising the step of:~~;

b) separating a portion of the partially deactivated catalyst particles from the product;

c) regenerating ~~the~~ at least a portion of the partially deactivated catalyst in a catalyst regenerator and directing at least a portion of the regenerated catalyst from the catalyst regenerator to a ~~the~~ separation unit;

d) modulating flow rate of a gas stream to the separation unit to separate catalyst particles in the separation unit into a first catalyst stream having a median particle diameter smaller than that of a second catalyst stream; and

e) directing at least a portion of the first catalyst stream to the reaction zone.

111. (Currently Amended): ~~The process of claim 104, wherein step (b) forms~~ A reaction process in which catalyst particles are separated according to median particle size and directed to a reaction zone, the process comprising the steps of:

a) contacting catalyst particles with a feedstock in the reaction zone to convert at least a portion of the feedstock to product and form an at least partially deactivated catalyst~~, the process further comprising the step of:~~;

b) separating a portion of the partially deactivated catalyst particles from the product;

c) stripping ~~the~~ at least a portion of the partially deactivated catalyst in a catalyst stripper and directing at least a portion of the stripped catalyst from the catalyst stripper to a ~~the~~ separation unit;

d) modulating flow rate of a gas stream to the separation unit to separate catalyst particles in the separation unit into a first catalyst stream having a median particle diameter smaller than that of a second catalyst stream; and

e) directing at least a portion of the first catalyst stream to the reaction zone.

112. (Currently Amended): ~~The process of claim 104, wherein the process further comprises the step of:~~ A reaction process in which catalyst particles are separated according to median particle size and directed to a reaction zone, the process comprising the steps of:

a) contacting catalyst particles with a feedstock in the reaction zone to convert at least a portion of the feedstock to product;

b) separating a portion of the catalyst particles from the product;

c) cooling heated catalyst separated from the product in the reaction system in a catalyst cooler ~~and~~;

d) directing at least a portion of the cooled catalyst from the catalyst cooler to ~~the~~ a separation unit;

e) modulating flow rate of a gas stream to the separation unit to separate catalyst particles in the separation unit into a first catalyst stream having a median particle diameter smaller than that of a second catalyst stream; and

f) directing at least a portion of the first catalyst stream to the reaction zone.

113. (Currently Amended): ~~The process of claim 104,~~ A reaction process in which catalyst particles are separated according to median particle size and directed to a reaction zone, the process comprising the steps of:

a) contacting catalyst particles with a feedstock in the reaction zone to convert at least a portion of the feedstock to product;

b) separating a portion of the catalyst particles from the product;

c) directing at least a portion of the separated catalyst particles to a separation unit;

d) modulating flow rate of a gas stream to the separation unit to separate catalyst particles in the separation unit into a first catalyst stream having a median particle diameter smaller than that of a second catalyst stream;

e) directing at least a portion of the first catalyst stream to the reaction zone, and

f) ~~wherein the process further comprises~~ monitoring the median particle diameter of the first catalyst stream.

114. (Previously Presented): The process of claim 113, wherein the monitoring is performed by a laser scattering particle size analyzer, a Coulter counter, a device for determining rate of sedimentation, or a mechanical screening device.